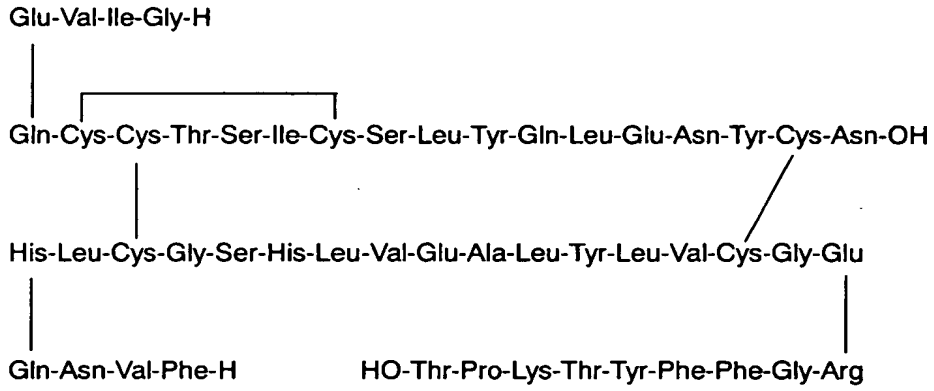
CLAIMS

1. An insulin-administering device for percutaneously or transmucosally administering insulin lispro represented by the structural formula indicated below or a pharmaceutically acceptable salt thereof (hereinafter referred to as "insulin lispro"), using at least two different electric field-applying means.



2. The insulin-administering device according to claim 1, characterized in that the two different electric field-applying means are iontophoresis and electroporation.

3. The insulin-administering device according to claim 2, characterized in that the electric current applied during iontophoresis is between 0.01 and 1.0 mA/cm^2.

4. The insulin-administering device according to claim 2 or 3, characterized in that the voltage applied during electroporation is between 1 V/cm and 10 kV/cm.

5. The insulin-administering device according to any one of claims 1 to 4, characterized in that said insulin lispro is dissolved, suspended, or dispersed in a hydrophilic matrix.

6. The insulin-administering device according to claim 5, characterized in that the hydrophilic matrix comprises one or more selected from the group consisting of agar, locust bean gum, xanthan gum, polyvinyl alcohols and derivatives thereof, and polyacrylic acid and salts thereof.

7. The insulin-administering device according to any one of claims 1 to 6, characterized in that said device comprises a membrane for controlling the release of said least one of the insulin lispros.

8. The insulin-administering device according to claim 7, characterized in that at least a pair of electrodes used for electroporation is disposed on the release-controlling membrane.

9. The insulin-administering device according to claim 7 or 8, characterized in that the release-controlling membrane is formed of a porous membrane.

10. The insulin-administering device according to any one of claims 1 to 4, characterized in that said insulin lispro is retained on the membrane.

11. The insulin-administering device according to claim 10, characterized in that said insulin lispro is retained in a dry state on the membrane and in that a part or all of said insulin lispro is dissolved when it is used.

12. The insulin-administering device according to any one of claims 2 to 11, characterized in that at least one of the electrodes used for electroporation is disposed directly on the skin or mucosa, or adjacent thereto.

13. An insulin-administering device, characterized in that said device comprises an electroporation-iontophoresis formulation containing insulin lispro, a reference formulation that is a counter electrode in iontophoresis, and a power supply connected to both formulations.

14. The insulin-administering device according to claim 13, characterized in that the power supply has a connecting port used for iontophoresis and a connecting port used for electroporation.

15. An electroporation-iontophoresis formulation, characterized in that said formulation comprises a backing, an iontophoresis electrode disposed on the backing, an insulin lispro-containing layer which is disposed on the iontophoresis electrode and contains an insulin lispro, and electroporation electrodes which are disposed on the insulin

lispro-containing layer and have polarities different from one another.

16. The electroporation-iontophoresis formulation according to claim 15, characterized in that a release-controlling membrane for controlling the release of said insulin lispro is provided between the insulin lispro-containing layer and the electroporation electrodes.

17. The electroporation-iontophoresis formulation according to claim 16, characterized in that the release-controlling membrane is a porous membrane having a pore size between 0.01 and 10 μm.

18. An electroporation-iontophoresis formulation, characterized in that said formulation comprises a backing, an iontophoresis electrode disposed on the backing, a hydrophilic matrix base disposed on the iontophoresis electrode, a liner disposed on the hydrophilic matrix base, a retaining membrane which is disposed on the liner and retains an insulin lispro, and electroporation electrodes which are disposed on the retaining membrane and have polarities different from one another.

19. The electroporation-iontophoresis formulation according to claim 18, characterized in that said insulin lispro is retained in a dry state on the retaining membrane.

20. The electroporation-iontophoresis formulation according to any one of claims 15 to 19, characterized in that the electroporation electrodes are formed as a multipoint contact-type.